

DESIMONE LEVEE TOE REPAIR  
GREEN RIVER, RIVER MILE 15.45 RIGHT BANK

Desimone Levee Repair (proposed for construction in 2001)

### Temporary Erosion and Sediment Control (TESC):

- \* The following will be brought to the site and staged on a daily basis as needed:
  - \* Straw bales for slope mulching
  - \* Silt fencing for perimeter siltation control
  - \* Crushed or washed rock for control of soil pumping on exposed soils in heavy traffic areas
  - \* 5/8 inch minus crushed rock for staging areas and road shoulders
  - \* Pea gravel for filter berms and silt fence installations
  - \* Hand brooms, street sweepers, and wash trucks for control of sediments on paved traffic surfaces.
- \* An undisturbed band of existing vegetation will be left intact along the waterline until excavation of failed or damaged toe buttress areas for installation of crushed rock bedding, toe rock, LWD anchor rocks, and LWD.
- \* A turbidity curtain will be installed at the site during in-water construction.
- \* All in-water construction will occur between June 15 and August 15, 2001, to avoid extended periods of rainy weather and high river discharge, and to coincide with the period of minimum habitat utilization by juvenile and adult salmonids.
- \* All paved traffic areas will be kept free from sediment accumulations by daily sweeping and washing.
- \* Turbidity will be monitored at the construction site, at flagged sampling stations 50 feet upstream from the excavation area and 250 feet downstream from the excavation area to facilitate compliance with limits on turbidity set forth in Washington Department of Ecology Order No. DE 97WQ-007 (February 24, 1997), and at a flagged sampling station located one mile downstream from the site.

### Construction Sequence; Toe and Bank Repair:

2. Stake limits of construction area at site.
3. Shape ramps to access bench from existing levee crest upstream and downstream of bench area.
4. Operating from the levee bench, detach the LWD rock anchor chains from the poplars previously staged on the low bench.
5. Starting at the downstream project limits, install the floating turbidity curtain in 175-foot-long increments to isolate the instream work area(s) from the flowing stream.
6. Starting at downstream project limits, construct toe repairs in fifteen foot long (maximum) increments, as follows:
  7. Starting at the downstream end of the project, clear and grub existing blackberries and reed canarygrass from the lower bank slope, above the OHWM, in 15 foot increments. Export these plant and soil materials to an approved disposal location (Pacific Topsoil site in Kent or King County Roads Division soil recycling center in Renton).
  8. Excavate existing failed levee rip-rap and unsuitable subgrade materials from the lower embankment slopes, above the water surface elevation, in the same 15 foot increments. Export these materials to an approved disposal location (Pacific Topsoil site in Kent or King County Roads Division soil recycling center in Renton).
  9. Excavate failed or damaged toe buttress areas and unsuitable subgrade materials from below the water surface elevation for placement of new crushed rock bedding, toe rock, and LWD anchor rocks, in the same 15 foot increments. Working from the embankment side toward the water's edge, leave an intact earthen "plug" at the riverward edge of the toe rock and LWD anchor rock excavation area until the moment of actual toe buttress bedding and rock placement in order to minimize turbidity.
  10. Excavate and remove the earthen "plug" from along the water's edge, completing the excavation to depth as rapidly as possible. Immediately place 2-1/4" crushed railroad ballast and quarry spalls to stabilize the exposed riverbed and embankment soils, and to provide suitable bedding conditions for placement of toe and LWD anchor rock. Complete this work within the same 15 foot increments.
11. Place rock LWD anchors within the prepared toe buttress bedding area at a 25 foot spacing, with anchor chains already attached to quarry holes drilled in the rock. Place additional toe buttress rocks in place to firmly secure the LWD anchors in place, and to secure the entire toe buttress against undercutting erosion, working within the same 15 foot increments as above. Level the top edge of the rock toe buttress at a finished elevation approximately one foot above the OHWM, using light loose rip-rap, 2-1/2" crushed ballast, and 1-1/4" crushed gravel to provide a secure base for subsequent soil lifts and plantings.

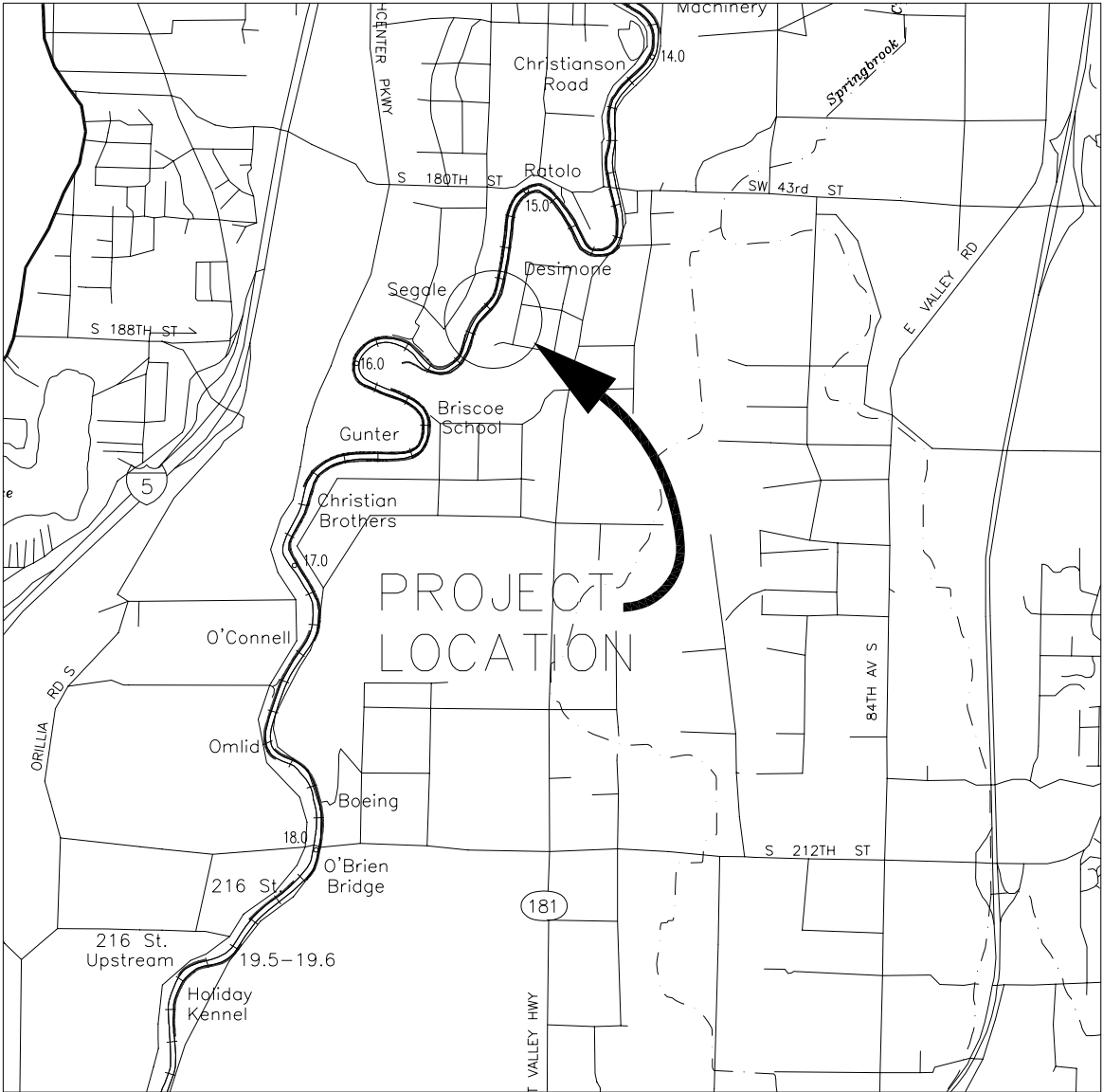
11. Using the trackhoe bucket, gently place the poplars and additional coniferous LWD into the water column, securing them along the bankline to the anchor rock with the chain attachments, and to each other, starting at the downstream end and proceeding upstream. Overlap cut log ends riverward of the next rootwad protruding downstream and secure overlapped logs to each other with additional one-inch diameter anchor chain. The LWD should overlap in a downstream direction as shown on the plan sheets. To the maximum extent, anchoring of the LWD should secure the logs as far below the OHWM as practical while minimizing the potential for individual logs to float up and become lodged on the bankline, during flood events. Precise placement of individual LWD pieces will be accomplished under the supervision of the project engineer and the Senior Ecologist.
12. Proceed as specified above in 15 foot increments upstream, relocating the floating turbidity curtain as needed for subsequent portions of the instream work, to the end of the project repair reach.
13. Remove turbidity curtain.

### Levee Slope Reconstruction:


3. Following completion of all instream toe buttress construction and LWD placement, place a 3-inch lift of crushed quarry screenings the full length of the toe buttress along the top edge of the newly placed rock. Seal all underlying voids and to create a secure base for subsequent placement of soil lifts and planting layers. Make sure the top surface of the screenings is located at a minimum of six inches above the OHWM elevation.
2. Place an 8-inch layer of Groco-amended planting soil ( $\geq 20\%$  Groco content) along the full length of the bench adjoining the riverbank within the project area, extending for a minimum of eight feet in width. Place a layer of live willow and dogwood cuttings onto the planting soil layer as shown on the cross section drawings. The cuttings will up to 10 feet in length in order to extend the width of the prepared soil lifts. Place additional potted native riparian shrub and tree species into the exposed edge of the soil lift as specified in the planting schedule. Butt ends of the cuttings can be up to four inches in diameter; exposed ends of the cuttings will extend no more than one foot riverward from the finished slope. Cover the layer of cuttings and potted plants with an additional 6 to 8 inches of planting soil and compact lightly with a single pass of the trackhoe or bulldozer tracks. Once installed in this manner, each layer of plantings will be embedded in a one foot minimum thickness of Groco-amended planting soil.
3. Import selected levee fill soils to the site and compact them in eight inch lifts to form fill layers between the layers of live cuttings. Each fill layer will be composed of three compacted soil lifts, extending the full length of the riverbank within the project area. Each finished fill layer will be wrapped with coir fabric for erosion protection.
4. Selected fill soils will be supplemented in lifts with crushed rock materials as noted above during periods of rainfall to provide for adequate compaction and to prevent pumping of mud in areas subject to equipment passage and truck traffic.
5. Alternate planting layers and coir wrapped fill and reconstruct lower embankment slopes to finished grade as shown on the cross section drawings and plan sheet.
6. The lower embankment slope lifts will be brought as close as possible to finished grade and mulched with straw on a daily basis as needed during any anticipated periods of rainy weather.
7. Hydroseed any remaining disturbed soil surfaces immediately following completion of all construction activities.
8. Stake slope areas subject to winter inundation with coir fabric over the completed hydroseed cover as needed to prevent winter erosion.
9. Plant middle and upper slope areas with additional potted native shrubs during the following plant dormancy season (October 1 through March 31) in accordance with planting plan and plant schedule shown on the project drawings.
10. Water plants and grass seed as needed, twice a week minimum, until the onset of fall rains
11. Equipment Used: PC 225, 230 and 330 track hoes, 10 CY dump trucks, 18 CY belly dump trucks, pickup trucks, 1 ton flatbed trucks, 30' bed trash hauler, hydroseed truck, water truck, and D6 bulldozer.

### Long Term ESC Monitoring:

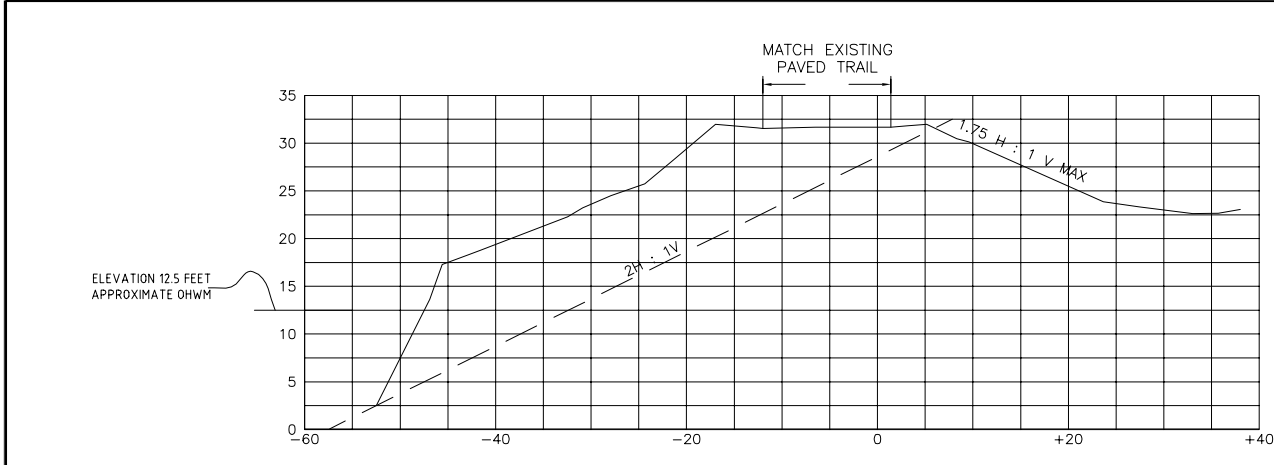
All stabilized slope areas will be monitored for signs of erosion during wet winter months and immediately repaired. Repairs can include straw mulching, straw mulch packing of incipient rills, gravel patching of incised rills, additional placement of topsoil, additional hand- and/or hydroseeding, additional installation of willow & dogwood live cuttings and/or potted native riparian shrubs and trees, placement of washed rock filter berms, and localized placement of additional silt fencing. The goal is to maintain a vigorous establishment of dense, deeply rooted erosion control grasses and native riparian vegetation on all disturbed slope areas at all times.



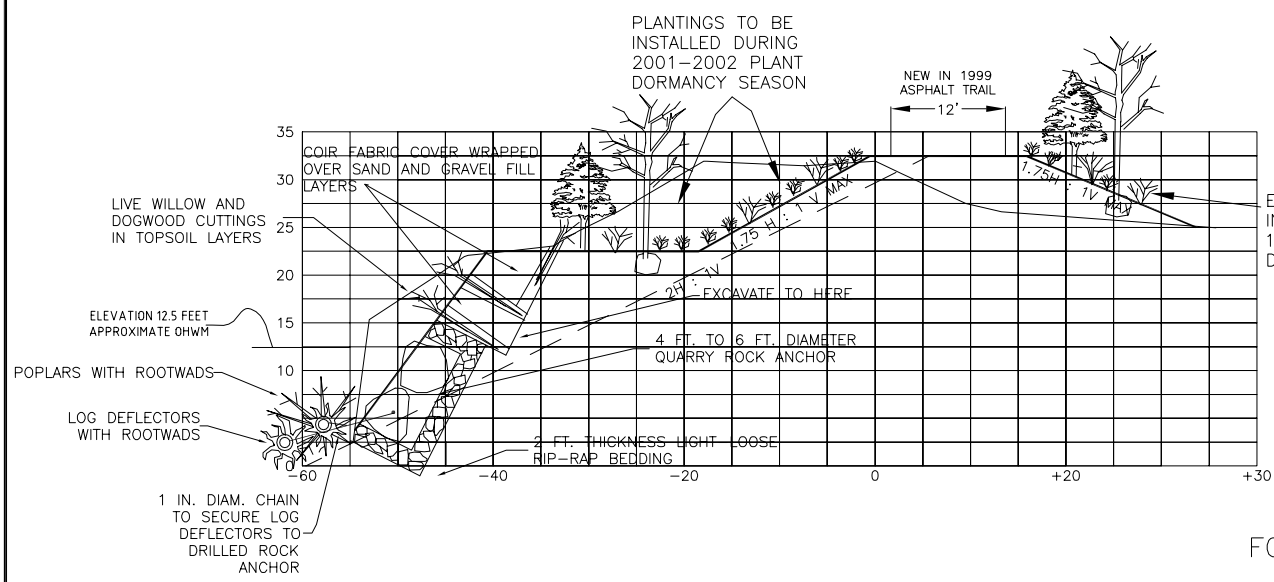
## LOCATION MAP

SURVEYED: <u>KC RIVERS</u>		<u>97-98</u>				PROJECT MANAGER: <u>ANDY LEVESQUE</u> DATE: <u>1/01</u>								KING COUNTY DEPT. OF NATURAL RESOURCES PAM BISSONNETTE, DIRECTOR WATER AND LAND RESOURCES DIVISION <b>DESIMONE LEVEE TOE REPAIR</b> GREEN RIVER, RIVER MILE 15.45 R.B. COVER		 <div style="display: flex; flex-direction: column; align-items: center;"> <div>SHEET 1</div> <div>OF</div> <div>5</div> <div>SHEETS</div> </div>	
BASE MAP PLOT: _____						PROJECT ECOLOGIST: <u>RUTH SCHAEFER</u> DATE: <u>1/01</u>											
DESIGN PLOT: _____						DESIGNED: <u>ANDY LEVESQUE</u> DATE: <u>1/01</u>											
CHECKED: _____						DRAWN: <u>KEN ZWEIG</u> DATE: <u>1/01</u>											
FIELD BOOK: _____																	
BY _____		DATE _____		REVISION _____		BY _____		DATE _____								RIVERS SECTION	

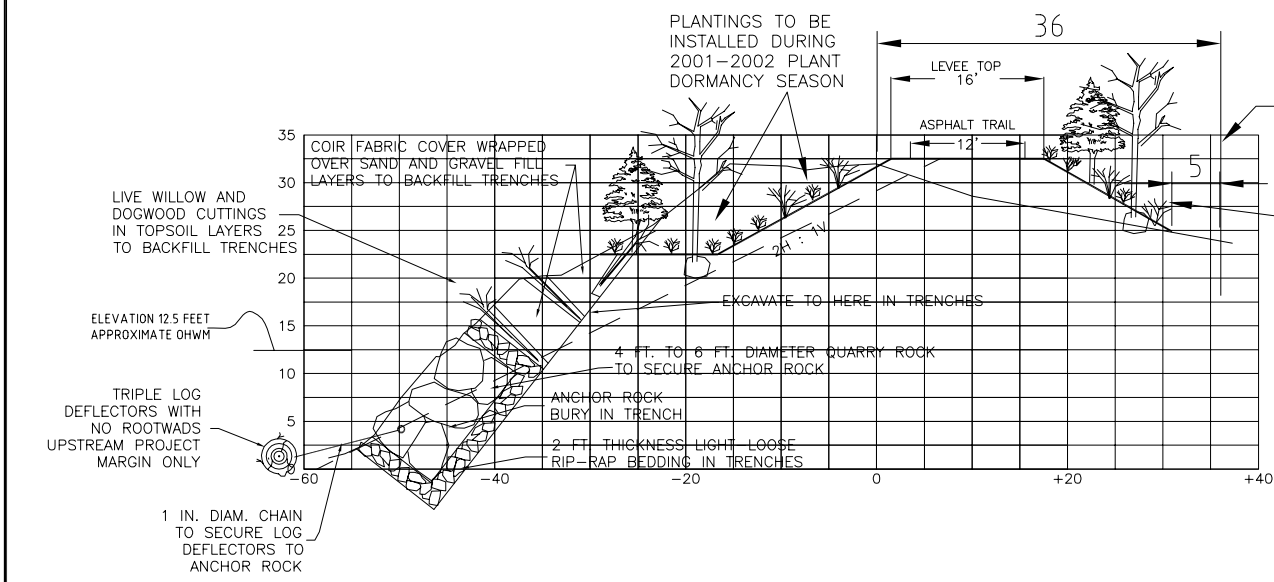




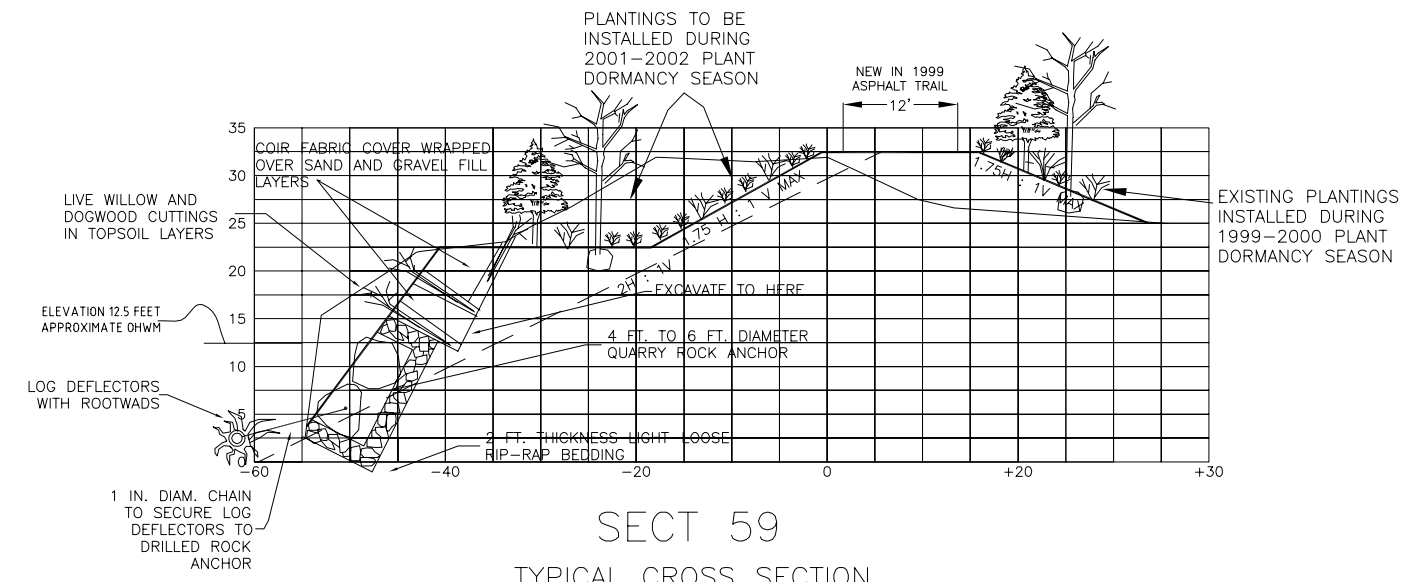
SECT 57  
MATCH GRADES TO  
EXISTING SLOPE



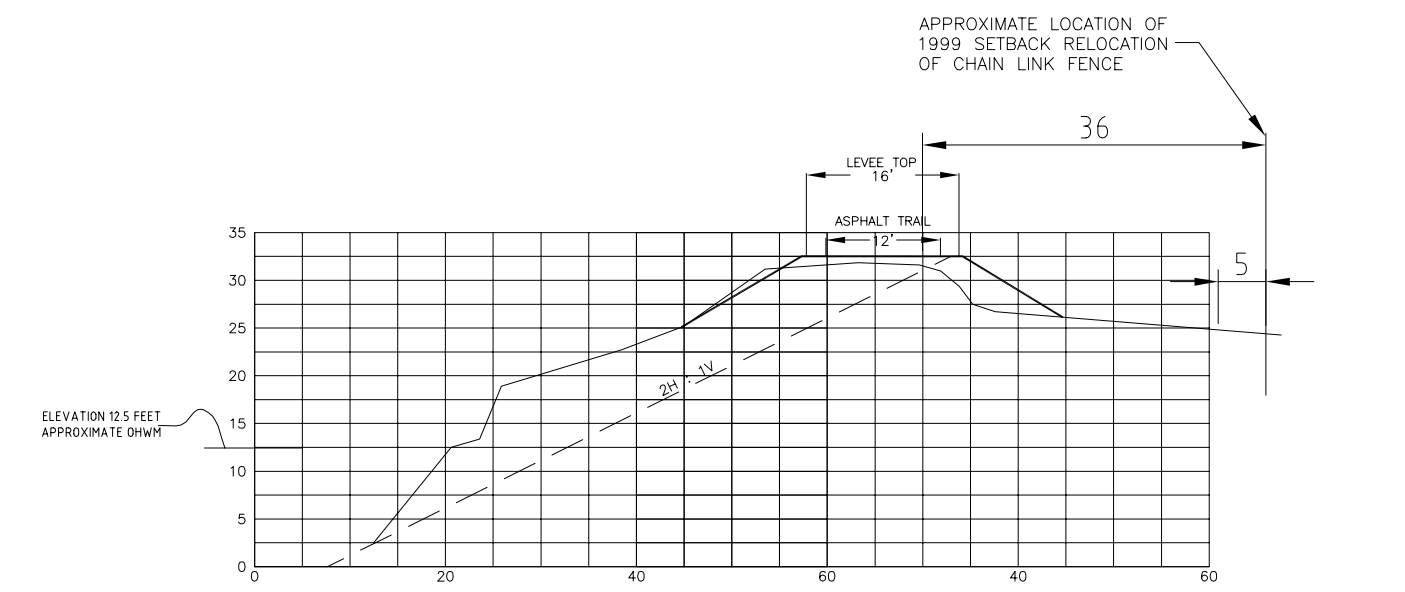
SECT 62  
TYPICAL CROSS SECTION  
FOR USE AT SECTIONS 60-66



SECT 78  
TYPICAL CROSS SECTION  
FOR USE AT SECTION'S 77, 78



SECT 59  
TYPICAL CROSS SECTION  
FOR USE AT SECTIONS 58, 59 & 67-76




SECT 79  
MATCH GRADES TO EXISTING SLOPE

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DRAWN: <u>KEN ZWEIG</u>	DATE: <u>1/01</u>

PROJECT No. 089565

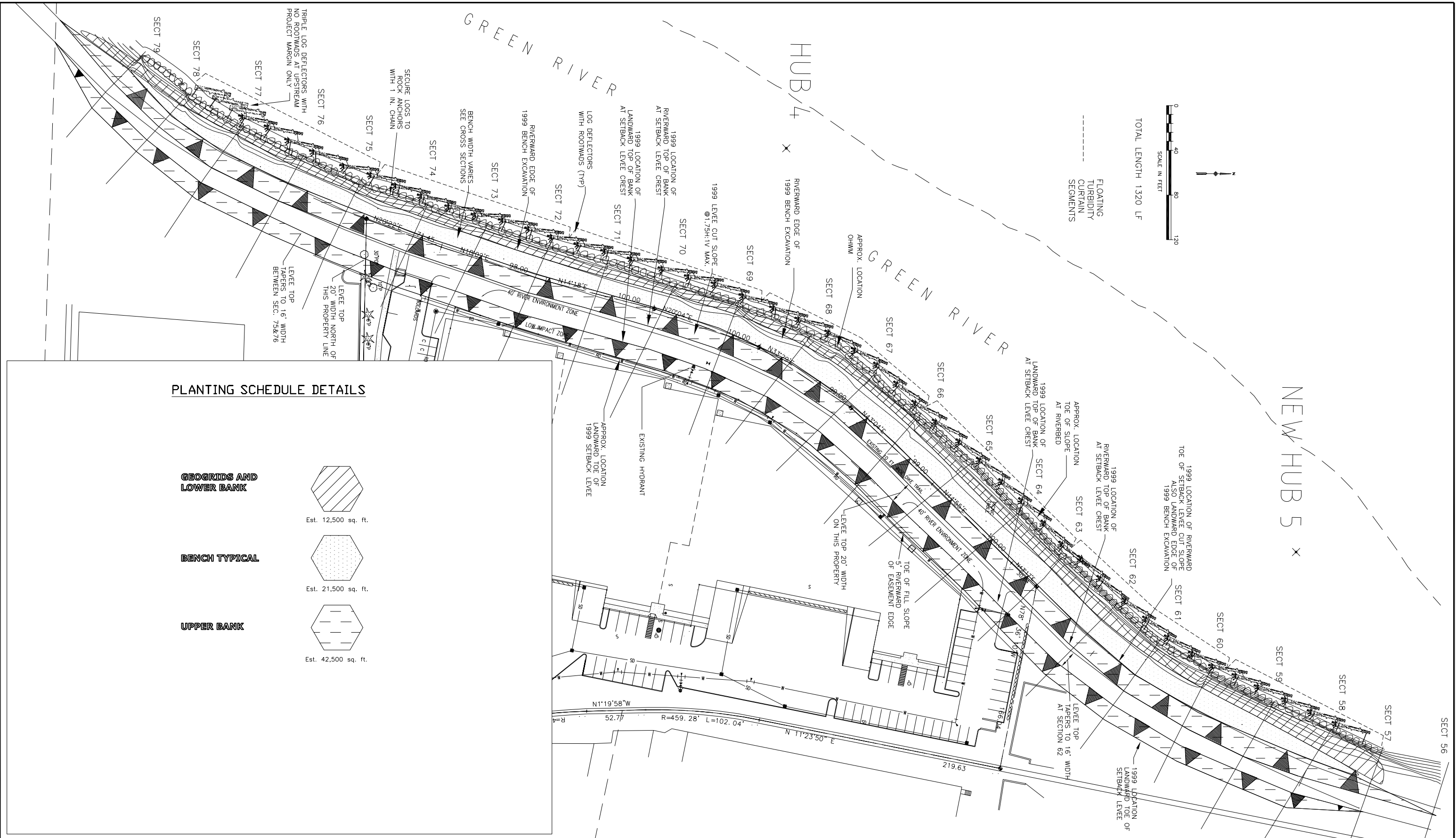
KING COUNTY DEPT. OF NATURAL RESOURCES  
PAM BISSONNETTE, DIRECTOR  
WATER AND LAND RESOURCES DIVISION  
**DESIMONE LEVEE TOE REPAIR**  
GREEN RIVER, RIVER MILE 15.45 R.B.  
CROSS SECTIONS



**King County**

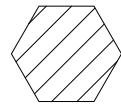
SHEET  
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OF  
**5**  
SHEETS

RIVERS SECTION



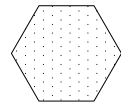
PLANTING SCHEDULE DETAILS

GEOGRIDS AND LOWER BANK



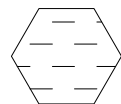
Est. 12,500 sq. ft.

BENCH TYPICAL



Est. 21,500 sq. ft.

UPPER BANK



Est. 42,500 sq. ft.

SURVEYED: KC RIVERS	97-98	TOE REPAIR REVISED	AL	12/00
BASE MAP PLOT:				
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PROJECT ECOLOGIST: RUTH SCHAEFER DATE: 1/01  
DESIGNED: ANDY LEVESQUE DATE: 1/01  
DRAWN: KEN ZWEIG DATE: 1/01

PROJECT No. 089565

KING COUNTY DEPT. OF NATURAL RESOURCES  
PAM BISSONNETTE, DIRECTOR  
WATER AND LAND RESOURCES DIVISION  
**DESIMONE LEVEE TOE REPAIR**  
GREEN RIVER, RIVER MILE 15.45 R.B.  
TEMPORARY EROSION & SEDIMENT CONTROL & PLANTING PLAN




King County

RIVERS SECTION

SHEET  
4  
OF  
5  
SHEETS

PLANTING SCHEDULE

Total Plants By Species		Common Name	Species Name	Typical Pot Size	Approx. Spacing	Lower Bank	Bench	Upper Bank
			TREES					
50		Bigleaf Maple	Acer macrophyllum	1 gallon	10'+		55	0
185		Red Alder	Alnus rubra	1 gallon	6'+		185	0
185		Oregon Ash	Fraxinus latifolia	1 gallon	6'+	45	185	
185		Sitka Spruce	Picea sitchensis	1 gallon	10'+		185	
235		Black Cottonwood	Populus trichocarpa	1 gallon	6'+	45	320	
185		Western Crabapple	Pyrus fusca	1 gallon	6'+	45	185	
185		Western Red Cedar	Thuja plicata	1 gallon	6'+		185	0
Total Trees	1210				TOTAL	135	1300	0
			SHRUBS					
548		Serviceberry	Amelanchier alnifolia	1 gallon	4'+			548
415		Red-osier Dogwood	Cornus stolonifera	1 gallon	4'+	275	140	
548		Western Hazelnut	Corylus cornutus	1 gallon	4'+			548
688		Black Hawthorn	Crataegus douglasii	1 gallon	4'+		140	548
548		Oceanspray	Holodiscus discolor	1 gallon	4'+			548
415		Black Twinberry	Lonicera involucrata	1 gallon	4'+	275	140	
274		Indian Plum	Oemleria cerasiformis	1 gallon	4'+			274
415		Pacific Ninebark	Physocarpus capitatus	1 gallon	4'+	275	140	
274		Red Flowering Currant	Ribes sanguineum	1 gallon	3'+			274
427		Nootka Rose	Rosa nutkana	1 gallon	3'+		140	274
427		Baldhip Rose	Rosa pisocarpa	1 gallon	3'+		140	274
274		Thimbleberry	Rubus parviflorus	1 gallon	4'+			274
140		Salmonberry	Rubus spectabilis	1 gallon	4'+		140	
3425		Red Elderberry	Sambucus racemosa	1 gallon	2'+		1300	2125
688		Snowberry	Symphoricarpos alba	1 gallon	4'+		140	548
Total Shrubs	9506				TOTAL	825	2420	6235

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